Washington Latin -- Calculus

Graphing Quadratics -- the 1 - 3 - 5 Method

Everyone knows how to graph quadratics by using the zeros, the y-intercept, the vertex and a table of other helpful values. There is an easier method that works with quadratics, that I call the over 1 up 1, over 1 up 3, over 1 up 5 method. Here’s how it works.

1. Find the Vertex

The first thing to do is find the vertex. We use  to get the *x-*coordinate, and plug that value into the quadratic to get the *y-*coordinate of the vertex: . Let’s use an example. If our quadratic is

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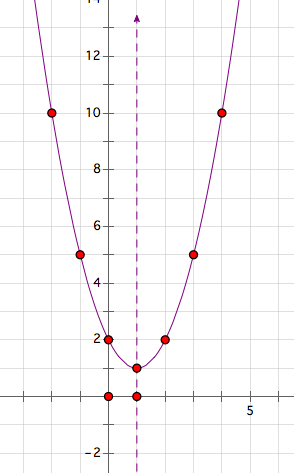
The x-coordinate of the vertex will be . Plug *1* back into the

function and we get:  So our vertex is

at *(1, 1)*.

2. Use over 1, Up 1, Over 3, Up 3.

Put the vertex (*1, 1)* on the graph. From there, go to the right one. This takes you to the grid line for  *x = 2.* Go up one. This takes you up to *(2, 2).* Then, go to the right again 1, which takes you to *x = 3.* Go up *3.* This takes you to (*3, 5).* One more time. Go to the right *1* to *x = 4.* Go up *5* to *y = 10,* so (*5, 10).*  These are all points on the parabola. And, since a parabola is symmetric around its axis of symmetry, the points are reflected to the left of the vertex. This gives you 7 points, which is plenty to graph the parabola. See the parabola below.



This works for any parabola as long as the coefficient of *x2* is *1*.